

F 62. (Twice Amended) The microchip apparatus of claim 58 wherein said denaturing reagent comprises a low ionic strength buffer.

F 65. (Twice Amended) The microchip apparatus of claim 58 wherein the detectable moiety is an enzyme.

F 67. (Twice Amended) The microchip apparatus of claim 58 wherein each said capillary channel further comprises a sample incubation zone disposed in communication with said sample introduction zone and said separation zone.

F 69. (Amended) The microchip apparatus of claim 68 wherein at least said sample introduction zone is in electrical connection with a high voltage and said detection zone is in electrical connection with each capillary channel and ground.

Rule 1.121
F --72.⁷⁵ (New) The microchip apparatus of claim 58 wherein the detectable moiety is a colored particle.

F 73.⁷⁶ (New) The microchip apparatus of claim 58 wherein the detectable moiety is a fluorophore.

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F 74. (New) The microchip apparatus of claim 58 wherein the detectable moiety is a chromophore.

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F 75. (New) The microchip apparatus of claim 58 wherein the detectable moiety is a radioisotope.

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F 76. (New) The microchip apparatus of claim 58 wherein the detectable moiety is an electrochemical moiety.

80
F 77. (New) The microchip apparatus of claim 58 wherein the detectable moiety is a chemiluminescent moiety.

81
F 78. (New) The microchip apparatus of claim 58 wherein the detectable moiety is biotin.

82
F 79. (New) The microchip apparatus of claim 58 wherein the detectable moiety is fluorescein.

83
80. (New) The microchip apparatus of claim 58 wherein the PNA probe is modified with the detectable moiety.

84
81. (New) The microchip apparatus of claim 58 wherein the detectable moiety is bound to the PNA probe.

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82. (New) The microchip apparatus of claim 58 wherein the detectable moiety is associated to the PNA probe.

86
83. (New) The apparatus of claim 54 wherein the separation zone comprises a sieving medium.

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84. (New) The apparatus of claim 83 wherein the sieving medium is selected from the group consisting of polyacrylamide, agarose, polyethylene oxide, polyvinyl pyrrolidine and methylcellulose.

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85. (New) The apparatus of claim 54 further comprising a denaturing reagent selected from the group consisting of urea, formamide, and organic solvents.

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86. (New) The apparatus of claim 54 further comprising a low ionic strength buffer.

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87. (New) The apparatus of claim 54 wherein said at least one PNA probe further comprises a charge-modifying moiety.

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88. (New) The apparatus of claim 54 wherein the particle is a colored particle.

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89. (New) The apparatus of claim 54 further comprising a sample incubation zone disposed in communication with said sample introduction zone and said separation zone.

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90. (New) The apparatus of claim 54 further comprising a sample detection zone disposed in communication with said separation zone.

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91. (New) The apparatus of claim 57 wherein the separation zone comprises a sieving medium.

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92. (New) The apparatus of claim ⁹⁴91 wherein the sieving medium is selected from the group consisting of polyacrylamide, agarose, polyethylene oxide, polyvinyl pyrrolidine and methylcellulose.

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93. (New) The apparatus of claim 57 further comprising a denaturing reagent is selected from the group consisting of urea, formamide, and organic solvents.

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94. (New) The apparatus of claim 57 further comprising a denaturing reagent comprises a low ionic strength buffer.

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95. (New) The apparatus of claim 57 wherein said at least one PNA probe comprises a charge-modifying moiety.

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96. (New) The apparatus of claim 57 wherein the particle is a colored particle.

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97. (New) The apparatus of claim 57 wherein the detectable moiety is a fluorophore.

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98. (New) The apparatus of claim 57 wherein the detectable moiety is a chromophore.

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99. (New) The apparatus of claim 57 wherein the detectable moiety is a radioisotope.

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100. (New) The apparatus of claim 57 wherein the detectable moiety is an electrochemical moiety.

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101. (New) The apparatus of claim 57 wherein the detectable moiety is a chemiluminescent moiety.

¹⁰⁵
102. (New) The apparatus of claim 57 wherein the detectable moiety is biotin.

¹⁰⁶
103. (New) The apparatus of claim 57 wherein the detectable moiety is fluorescein.

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104. (New) The apparatus of claim 57 wherein the PNA probe is modified with the detectable moiety.

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105. (New) The apparatus of claim 57 wherein the detectable moiety is bound to the PNA probe.

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106. (New) The apparatus of claim 57 wherein the detectable moiety is associated to the PNA probe.

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107. (New) The apparatus of claim 57 further comprising a sample detection zone disposed in communication with said separation zone.

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108. (New) The microchip apparatus of claim 71 wherein the detectable moiety is bound to the PNA probe.

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109. (New) The microchip apparatus of claim 71 wherein the PNA probe is bound to biotin.

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110. (New) The microchip apparatus of claim 71 wherein the PNA probe is bound to fluorescein.

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111. (New) The microchip apparatus of claim 71 wherein the PNA probe is modified with the detectable moiety.

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112. (New) An apparatus comprising:

- a. a sample introduction zone;
- b. a separation zone in communication with said introduction zone;
- c. at least one PNA probe modified with a label, said label comprising a detectable moiety, said PNA probe disposed upstream of said separation zone; and
- d. a sample incubation zone disposed in communication with the sample introduction zone and in communication with the separation zone.

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113. (New) The apparatus of claim ¹¹⁵112 wherein the detectable moiety is bound to the PNA probe.

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114. (New) The apparatus of claim ¹¹⁵112 wherein the PNA probe is bound to biotin.

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115. (New) The apparatus of claim ¹¹⁵112 wherein the PNA probe is bound to fluorescein.--